

CLAIMS:

1. An electromagnetic actuator comprising a first magnetic assembly, a second magnetic assembly, the polarity of one of said assemblies being changeable
5 in response to an electrical control signal in order to cause relative movement between the first and second assemblies along an axis of relative movement, one of the assemblies (12) being provided with a fin (14) projecting transversely to said axis of relative movement and the other of the assemblies being provided with
10 a slot (15) extending parallel to the axis of relative movement and arranged to receive the fin (14), characterised in that the said other assembly comprises a plurality of magnetic elements in order to create axially alternating magnetic fields.
2. An actuator according to claim 1, wherein said other assembly is in
15 the form of a cylinder arranged to house the first assembly.
3. An actuator according to claim 2, wherein the second assembly comprises a plurality of permanent magnetic sections each having pole pieces (24b).
- 20 4. An actuator according to claim 3, wherein the pole pieces (24b) taper towards the outer periphery of the assembly.
5. An actuator according to claims 2,3 or 4, wherein the ends of the
25 cylinder are sealed and the slot 15 is provided with a sliding seal (16) in order to provide clamping for the movement of the first assembly in the second assembly.
6. An actuator according to any one of claims 2 to 5, wherein the said other assembly comprises a plurality of coils wound in order to create a channel to

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H1 receive the fin of the first assembly.

7. An actuator according to claim 6, wherein the coils are wound in pairs in a figure of eight.

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